
R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

THE CLAIMS

Independent claims 16 and 19 have been amended to clarify that the shutter, when closed, prevents stray light from gaps between adjacent ones of the micromirrors from reaching the specimen, as supported by the disclosure in the specification at, for example, page 15, line 24 to page 16, line 10, and throughout the specification.

No new matter has been added and it is respectfully submitted that the amendments to claims 16 and 19 are clarifying in nature only, and that no new issues have been raised which require further consideration on the merits and/or a new search. Accordingly, it is respectfully requested that the amendments to the claims be approved and entered under 37 CFR 1.116.

THE PRIOR ART REJECTION

Claims 16-21 were rejected under 35 USC 103 as being obvious in view of the combination of US 2003/0063376 ("Shimizu et al") and US 2003/0086145 ("DeSimone et al"). This rejection, however, is respectfully traversed.

With the structure of the present invention as recited in independent claim 16, before the second image pickup operation, only specified ones of the micromirrors (4a, 4b) are turned on to irradiate only a necessary part of the specimen (9) with the illumination light, so that an unnecessary part of the specimen is not illuminated. In addition, when the micromirrors (4a, 4b) are selectively activated, stray light due to reflected light from the gaps between adjacent ones of the micromirrors (4a, 4b) is prevented from reaching the specimen by the shutter (16). Thus, the stray light does not reach a specimen cell, so that the stray light is prevented from adversely affecting the cell. Furthermore, since the shutter is closed before and after the image pickup operation, the fluorescent material of the specimen (9) is illuminated with light from the micromirrors (4a, 4b) only during the image pick-up operation of the camera (17). Accordingly, the cell is only slightly damaged, and satisfactory observation can be achieved with good contrast.

With the structure of the present invention as recited in independent claim 19, moreover, when the shutter is closed, stray light due to reflected light from the gaps between adjacent ones of the micromirrors (4a, 4b) (which are selectively turned on) is shut out by the shutter (16). Thus, the stray light does not reach a cell, so that the stray light is prevented from adversely affecting the cell. In addition, since the shutter is closed

before and after the image pickup operation, the fluorescent material of the specimen (9) is illuminated with light from the micromirrors (4a, 4b) only during the image pick-up operation of the camera (17). Accordingly, the cell is only slightly damaged, and satisfactory observation can be achieved with good contrast.

Significantly, the stray light that is prevented from reaching the sample by the shutter of the claimed present invention is not light that can be stopped by exercising control of the micromirrors, and the specimen cannot be protected from the stray light solely by controlling the micromirrors (page 3, lines 5-10 of the specification). Thus, the shutter of the present invention as recited in independent claims 16 and 19 protects the specimen from light that cannot be stopped by control of the micromirrors alone.

It is respectfully submitted that the above described structural features and advantageous effects of the present invention as recited in amended independent claims 16 and 19 are not at all disclosed, taught or suggested by any of the prior art of record.

Indeed, as recognized by the Examiner Shimizu et al discloses a DMD 20, and Shimizu et al discloses that the DMD 20 can be used as a shutter. However, as recognized by the Examiner, Shimizu et al does not disclose a shutter in addition to the DMD 20.

For this reason, the Examiner has cited DeSimone et al to supply the missing teachings of Shimizu et al. As recognized by the Examiner, DeSimone et al discloses a DMD 48 and a shutter 82. It is respectfully pointed out, however, that according to DeSimone et al, the shutter 82 is merely a manually operable shutter provided in a light source mount 44. And it is respectfully submitted that DeSimone et al does not disclose operating a shutter in accordance with the operation of the DMD in the manner of the claimed present invention.

Accordingly, it is respectfully submitted that even if the teachings of DeSimone et al and Shimizu et al were combinable in the manner suggested by the Examiner, such combination would still not achieve or render obvious the features of the present invention as recited in independent claims 16 and 19 whereby the shutter is operated in accordance with the operation of the DMD to achieve the advantageous effects described above.

It is respectfully submitted, moreover, that none of the other prior art of record is any more pertinent to the claimed present invention than Shimizu et al and DeSimone et al.

USP 6,243,197 discloses an LCD 5 for blocking light with a variable transparent/opaque pattern, and USP 6,243,197 discloses that the LCD can be replaced by a DMD. However, USP 6,243,197 does not disclose a shutter separate from the LCD or DMD.

USP 6,128,077 discloses DMDs 120 and 420, which may be used as shutters, but does not disclose a shutter in addition to the DMDs.

USP 5,587,832 discloses DMDs 14 and 32, to be used as shutters, but does not disclose a shutter in addition to the DMDs.

USP 6,483,641 discloses a DMD 34, which may be used as a shutter, but does not disclose a shutter provided separately from the DMD.

US 2004/0047034 discloses a DMD 16 to scan a light beam, and an optional shutter 7. However, US 2004/0047034 does not disclose operating the shutter 7 in accordance with the DMD 16 as according to the present invention as recited in independent claims 16 and 19.

And finally, US 2004/0061914 discloses a DMD 7 and a shutter 3. However, US 2004/0061914 does not disclose controlling the shutter and DMD as according to the present invention as recited in independent claims 16 and 19.

In view of the foregoing, it is respectfully submitted that the present invention as recited in independent claims 16 and 19 as well as claims 17-18 and 20-21 depending respectively therefrom clearly patentably distinguishes over all of the prior art of record, in any combination under 35 USC 103.

Entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

/Douglas Holtz/

Douglas Holtz
Reg. No. 33,902

Frishauf, Holtz, Goodman & Chick, P.C.
220 Fifth Avenue - 16th Floor
New York, New York 10001-7708
Tel. No. (212) 319-4900
Fax No. (212) 319-5101

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